

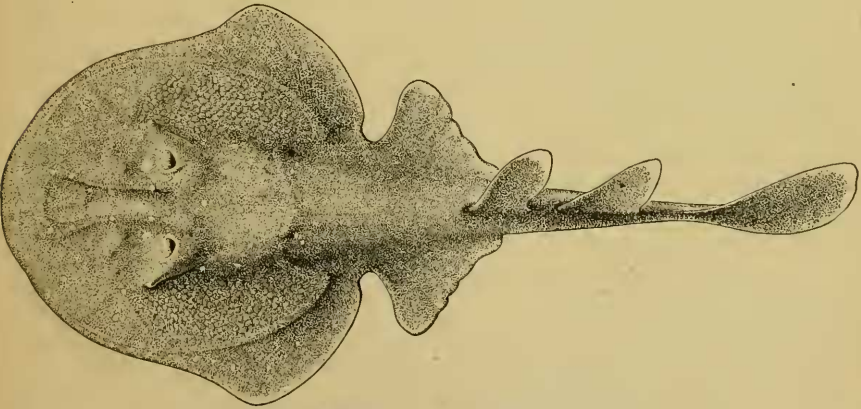
DESCRIPTIONS OF TWO NEW SPECIES OF ELECTRIC RAYS, OF THE FAMILY NARCOBATIDÆ. FROM DEEP WATER OFF THE SOUTHERN ATLANTIC COAST OF THE UNITED STATES.

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In a lot of fishes collected by the steamer *Albatross* of the U. S. Bureau of Fisheries in deep water off the southern Atlantic coast of the United States were found two electric rays, with rudimentary (functionless) eyes, differing specifically one from the other and, likewise, from the only known species under the genus to which these are now assigned, namely *Benthobatis* Alcock.^a

BENTHOBATIS MARCIDA Bean and Weed, new species.

Disk broadly ovate, body abruptly narrowed at the caudal edge of the pectoral fins so that the ventrals appear to be inserted entirely on



BENTHOBATIS MARCIDA.

the tail, which thus appears very long. The vent is just midway between tip of snout and end of caudal fin. The width across pectoral

^aAnn. and Mag. Nat. Hist., August, 1898, p. 144. Zool. of R. I. M. S. *Investigator*, Calcutta, 1899, p. 17, pl. xxvi, fig. 1. Type of the genus *Benthobatis* *moresbyi*.

fins is equal to the distance from tip of snout to caudal edge of these fins. The lax skin makes it difficult to see the true shape of the ventral fins. They appear to be less developed than in other members of the family. They are adnate to the tail their entire length and have the rays rather feebly developed. Two dorsal fins are developed, the second much larger than the first, the first dorsal inserted slightly in advance of the caudal edge of the ventrals; caudal large, obovate, with the dorsal edge nearly straight and the ventral edge obliquely rounded; tail with a very distinct lateral fold; eyes wanting or rudimentary, their position indicated by a pale spot situated $1\frac{1}{2}$ cm. in front of the spiracles; teeth flat or concave, broadly rhombic with a small backward projecting point and arranged in quincunx; spiracles large, the edges not fringed or tuberculate; nasal valves confluent into quadrangular flap; a large electric organ developed between the head and pectoral fin on each side.

The skin over the entire body is very lax and flabby, making it difficult to see the true shape of the creature and take its measurements. The species is known from a single specimen, a female 49 cm. long, taken at station 2660 by the steamer *Albatross* of the Bureau of Fisheries, May 3, 1886, at a depth of 504 fathoms, in the course of an exploration of the eastern coast of the United States.

| | <i>Measurements.</i> | <i>Cm.</i> |
|----------------------------------------------------------------------------|-------------------------|------------|
| Total length | ($19\frac{5}{16}$ in.) | 49.0 |
| Total length, without caudal | | 40.5 |
| Tip of snout to end of ventrals | | 28.8 |
| Tip of snout to end of pectorals | | 21.6 |
| Tip of snout to origin of first dorsal | | 28.5 |
| Tip of snout to origin of second dorsal | | 32.6 |
| Tip of snout to spiracles | | 9.8 |
| Tip of snout to nostrils | | 7.0 |
| Tip of snout to first gill slits | | 12.0 |
| Tip of snout to last gill slits | | 16.0 |
| Tip of snout to mouth | | 8.7 |
| Tip of snout to vent | | 24.5 |
| Vent to end of caudal | | 24.5 |
| Length of first dorsal base | | 2.8 |
| Length of second dorsal base | | 4.0 |
| Length of caudal | | 8.5 |
| Diagonal height of first dorsal from origin to highest point | | 4.5 |
| Diagonal height of second dorsal | | 6.5 |
| Depth of caudal from highest point to horizontal projection of lowest part | | 6.0 |
| Width across pectorals | | 21.5 |
| Width across ventrals | | 14.0 |
| Width between spiracles | | 4.3 |
| Width between nostrils | | 3.8 |
| Width of mouth | | 2.0 |
| Width between first gill slits | | 5.3 |
| Width between last gill slits | | 4.4 |
| Length of opening of each gill slit about | | 1.0 |

Color of dorsal surface, light fawn-color, with a few scattered white spots about 1-2 mm. in diameter. The color becomes lighter toward the edges of the body and fades gradually into the dirty white of the belly.

Type.—Cat. No. 62916, U.S.N.M.

Marcida, loose, soft, lacking substance.

BENTHOBATIS CERVINA Bean and Weed, new species.

Disk considerably narrower than long, its width 2.5 cm. (one-sixth) less than the distance from tip of snout to end of pectoral fins; this is somewhat wider than is represented in the figure of *B. moresbyi*; length of disk slightly less than half of total length; eyes situated about 0.7 cm. in advance of the spiracles and much less reduced than in *B. moresbyi* and *B. marcida*; they may be slightly functional as the orbit seems to be somewhat developed; the external opening is about 1 mm. in length. Teeth rhombic, arranged in quin-cunx, occupying nearly the whole width of the jaw and each tooth has the surface flat or concave with a sharp point projecting backward.

Ventral fins about as represented in *B. moresbyi*; second dorsal much larger than the first and the caudal well developed evenly above and below with posterior margin rounded. In *B. moresbyi* the first dorsal is represented as being much larger than the second.

Nasal valves confluent, forming a quadrangular curtain; an electric battery on each side between head and pectoral fins.

Measurements.

| | Cm. |
|----------------------------------------|----------|
| Total length..... | 33.0 |
| | (13 in.) |
| Total length without caudal..... | 27.5 |
| Length to end of ventral fins..... | 20.0 |
| Length to end of pectoral fins..... | 15.5 |
| Length to origin of first dorsal..... | 18.8 |
| Length to origin of second dorsal..... | 21.7 |
| Length to spiracles..... | 6.0 |
| Length to nostrils..... | 4.5 |
| Length to first gill slit..... | 7.8 |
| Length to last gill slit..... | 10.3 |
| Length to mouth..... | 5.3 |
| Length to vent..... | 16.3 |
| Vent to end of caudal..... | 16.7 |
| Width across pectorals..... | 13.0 |
| Width across ventrals..... | 9.8 |
| Width between spiracles..... | 2.6 |
| Width between nostrils..... | 2.5 |
| Width of mouth..... | 1.5 |
| Width between first gill slits..... | 4.5 |
| Width between last gill slits..... | 3.5 |
| Length of gill slits about..... | 0.6 |
| Length of first dorsal base..... | 1.6 |

| | <i>Cm.</i> |
|---------------------------------------|------------|
| Length of second dorsal base..... | 2.9 |
| Length of caudal..... | 5.5 |
| Depth of caudal..... | 2.7 |
| Diagonal height of first dorsal..... | 2.5 |
| Diagonal height of second dorsal..... | 3.5 |

Color.—Upper surface light fawn color, fading at the edges into the dirty white of the belly; a few white spots scattered over the upper surface of the body; these are much less prominent than described in *B. moresbyi*.

Entire body and fins, except the caudal, enveloped in a loose flabby skin.

This species is well differentiated from *B. moresbyi* by the difference in color, greater width of disk, difference in relative size of dorsal fins, and in the greater development of the eyes, which may be due to the less depth of water in which it lives.

This species is known from a single specimen, a female 33 cm. (13 inches) long, from station 2664, steamer *Albatross*, of the U. S. Bureau of Fisheries, lat. 29° 41' N., long. 79° 55' W., depth 373 fathoms; bottom coral sand. Collected May 4, 1886.

Type.—Cat. No. 62917, U.S.N.M.

Cervina, like a deer, from the fawn color.

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